VANGUARD PMC Bus Analyzer

TECHNICAL NOTE 9001

Bus Analyzer Non-Volatile Memory

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Introduction

Vanguard PMC Analyzer and Exerciser Non-Volatile Memory/Data Retention
Please be advised as follows regarding the design and operation of the Vanguard PMC Advanced Analyzer and Exerciser. Note that all Vanguard Analyzers are the same with respect to hardware. Different features and options are enabled by software license keys.

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Discussion

There are ten types of memory on the Vanguard PMC, cPCI and PCI boards.
Analyzer:
(1) Trace memory 64MB DDR SDRAM
(2) Processor FLASH memory, 16 MB
(3) Analyzer FLASH memory, 16 MB
(4) Exerciser FLASH memory, 16 MB
(5) DRAM CPU memory, 64MB
(6) Non-volatile Serial EEPROM, 1 KB, 2 pcs.
(7) Xilinx Virtex2 Pro 3000 FPGA
(8) Xilinx Virtex2 Pro 1500 FPGA
(9) Exercsier target memory, DDR SDRAM, 16MB
(10) Exerciser DMA descriptor RAM, 2-port SRAM, 576KB

(1) The Vanguard is incapable of retaining any information captured from the bus in the trace memory after the 5 Volt power source is interrupted or disconnected either at the PCI inputs or the optional front panel inputs. Removing the Vanguard from a slot, results in the total destruction and complete loss of all data temporarily captured and stored in the trace memory of the product.

(2) Processor FLASH memory. The processor FLASH memory is used to store boot code, operating system and application. The FLASH memory is not accessible from the user interface, but does store some configuration data, like IP configuration, board serial number, etc.

CWCDS has implemented a flash checksum calculation feature that is available through the User Interface. This calculates a 32 bit check sum for each Flash device on the board. These numbers are calculated each time the command is executed and they are not stored anywhere. Select Tools/Hardware/Checksum in BusView to use this feature.

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There is also a feature that clears all types of settings stored in the flash excluding the firmware. This is also available by selecting Tools/Hardware/Checksum in BusView.

(3) Analyzer 16 MB FLASH memory. The Vanguard Flash memory is used to store FPGA images and firmware. Only the BusView application can update the contents of the flash memory through the front panel connection. The flash memories can not be updated from the PCI bus. No information recorded from the bus is stored in flash and it is not possible for the user to store any recorded information in the FLASH memories. If there is a requirement to erase and restore the flash memory, this can be done by uploading new firmware from the BusView User Interface. As part of any Flash reprogramming procedure, the first part of this is to erase the flash by programming a binary '1' to all bit locations.

(4) Exerciser 16 MB FLASH. Same concerns and procedures as (2), above.

(5) The contents of the CPU RAM is completely lost whenever power is disconnected from the board.

(6) The Vanguard does have a non-volatile EEPROM memory for the purpose of preserving FPGA configuration setup parameters. There is no recorded information from the bus being stored in this EEPROM. The contents of this memory may be destroyed by physically moving SW3-4 to the ON position and powering up the board once. This switch must be set in the OFF position in order to operate the board.

(7) On power up, the FPGAs load the appropriate image from the FLASH memory. The user can not manually load any information into the Xilinx in any way. The FPGAs do contain some SRAM that is used during operation, but all contents in the FPGAs including the memory are lost when power is disconnected.

(8) The Exerciser CPU and Target memory is used during operation of the exerciser. When power is disconnected from the board, the contents are completely lost.

(9) The DMA descriptor dual port SRAM is filled with DMA instructions from the CPU write port and read by the FPGA read port. The SRAM is not accessible for the user and no information other than DMA instructions are stored in this memory. The contents are completely lost when power is disconnected.

Should you require any additional information regarding Curtiss-Wright Controls Defense Solutions' products please do not hesitate to contact CWCDS at (937) 252-5601 or (800) 252-5601 or email DTN_info@curtisswright.com.
World Wide Web address: www.cwcdefense.com/sales.html

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